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LETTER TO THE EDITOR

Endotracheal tube connector defect causing airway obstruction in an infant

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A case of difficulty was recently encountered in ventilating an anaesthetised infant after intubating the trachea with size 3.5 mm endotracheal tube. It was found that the problem had occurred due to a manufacturing defect in the endotracheal tube connector where the connector was abnormally tapered and had an extremely narrow opening. The case underlines the need for a thorough check of each connector before use, especially for paediatric endotracheal tubes.

Keywords: airway, endotracheal, infant, obstruction

Sir,

In clinical practice manufacturing defects of airway equipment are seen rather infrequently; however, defective airway equipment can potentially compromise the airway and hence the patient's safety. Usually most ET (endotracheal tube) defects are detected during routine visual inspection before their use, while some go unnoticed during such inspection and can lead to partial or complete airway obstruction in intubated patients. We report one case of partial airway obstruction resulting from manufacturing defect in the ET connector.

A 3-month-old infant girl weighing 5 kg and with septic arthritis of right knee was scheduled for emergency arthrotomy. After induction of anaesthesia with intravenous propofol 15 mg, fentanyl 15 mcg and vecuronium 0.5 mg, the patient was mask ventilated using a Jackson Rees' Circuit (© Intersurgical Ltd., Wokingham, Berkshire, UK) and her trachea intubated with ET size 3.5 mm (Sterimed Medical Devices, Haryana, India). The placement of ET was confirmed with capnography and auscultation of bilaterally equal breath sounds. However, after intubation there was increasing difficulty in ventilating the patient using the same Jackson Rees' circuit as the compliance of the breathing bag was reduced, airway pressures increased and there was an alarming rise in end tidal carbon dioxide (over 60 mm Hg). To exclude secretions as a source of obstruction, we passed an infant suction catheter (size 6 FG) through the ET connector. We noticed that the inlet of the ET connector was abnormally narrow. We replaced it with an ET connector of a different make, which normalised compliance of the breathing bag as well as the airway pressures, resulting in marked improvement in ventilation. The surgery was commenced and completed uneventfully. Later, on careful inspection of the faulty ET connector, we found that it was extremely tapered and that the internal diameter of its opening was only 1.0 mm instead of standard 3.5 mm (Figure 1). We found similar defects in other paediatric ET connectors from the same manufacturer. The manufacturer (Sterimed Medical Devices, Haryana, India) was informed of this defect and the faulty ETs were removed from use in the operation theatre.

The possibility of an airway obstruction should be considered when the airway pressures increase, compliance of the breathing bag declines or when ventilation becomes inadequate. There are reported cases of obstruction from manufacturing defects such as intra-luminal plastic meniscus, and defective ET cuff and connector.[1–4] As defect of ET connectors may not be easily visible on routine inspection, this case underlines the need for a thorough check of the internal lumen of each connector, especially of paediatric ETs to prevent airway-related complications. This was the first instance encountered by us in our department where a manufacturer of paediatric ETs had not adhered to the standard specifications.

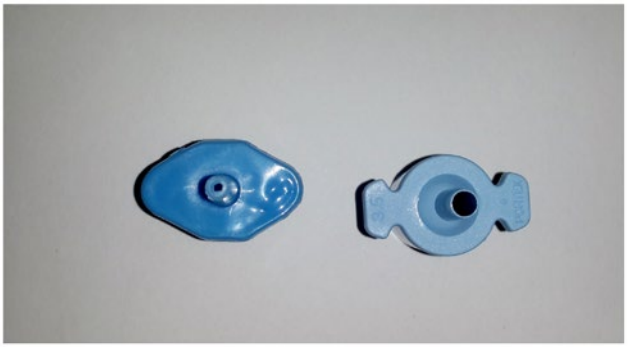

Figure 1: Defective connector with narrowed lumen (right) compared with a normal connector of size 3.5 mm ET (left).

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